Recommendations for Andover St. Corridor

The speed on Andover Street (Route 133) has been a reoccurring topic at City Council meetings since at least 1980. During that year, the Massachusetts Department of Public Works conducted a traffic study which determined the 85th percentile speed to be between 43 and 46 MPH. Ultimately the speed limit was set at 40 MPH for most of Andover Street. The only way to lower the speed limit, and therefore increase pedestrian safety at crosswalks, is by undertaking a traffic calming program as outlined below.

Findings:

- Andover Street is a roadway under City jurisdiction and is designated as State Route 133.
- The legal speed limit on Andover Street is as follows:
  - 40 MPH for eastbound traffic from Nesmith Street to Tewksbury Town line (1.36 miles total);
  - 40 MPH for westbound traffic from Tewksbury Town line for a distance of 1.24 miles.
  - 30 MPH for westbound traffic from Mansion Dr. to Nesmith St. a distance of 0.12 miles.
- The average daily traffic is about 18,100 (MassDOT 2014 count at Tewksbury town line)
- Andover Street is a very wide roadway with 5' foot bike lanes, 13' travel lanes and a 10' median turning lane (46 feet total width).
- Andover Street does not have any intersections listed on the top 100 crash ratings in the Northern Middlesex region.

Recommendations: The following traffic calming measures are recommended as short, medium, and long term solutions:

1. Short term (FY 2016)
   - ✓ Repaint crosswalk, relocate crosswalk signs, and place a moveable pedestrian sign in the median at Douglas Street;
   - ✓ Restripe Andover Street to reduce travel lane width from 13' to 11';
   - ✓ Enforce speed limit and crosswalk with speed trailer and decoy pedestrians;
   - ✓ Supply crossing guard with large stop paddle;
   - Set up Safe Routes to School presentation at Reilly and Sullivan Schools;
   - Initiate study to determine the three best locations for crosswalks along the corridor;
     i. Douglas Road for Reilly Elementary
     ii. Draper Street for Sullivan Middle School
     iii. Wentworth Ave.
   - Request City Council appropriate funds for engineering design services.
2. Medium Term (FY 2017)
   - Install crosswalks with ADA ramps, paint and adequate signage at three locations;
   - Initiate design contract necessary to apply for Transportation Improvement Program (TIP) funding in Federal FY 2018 (October 2017 – September 2018);
3. Long Term (FY 2018 – 2020)
   - Construct three refuge islands at the previously installed crosswalks;
   - Conduct necessary speed study and reduce speed limit as appropriate.

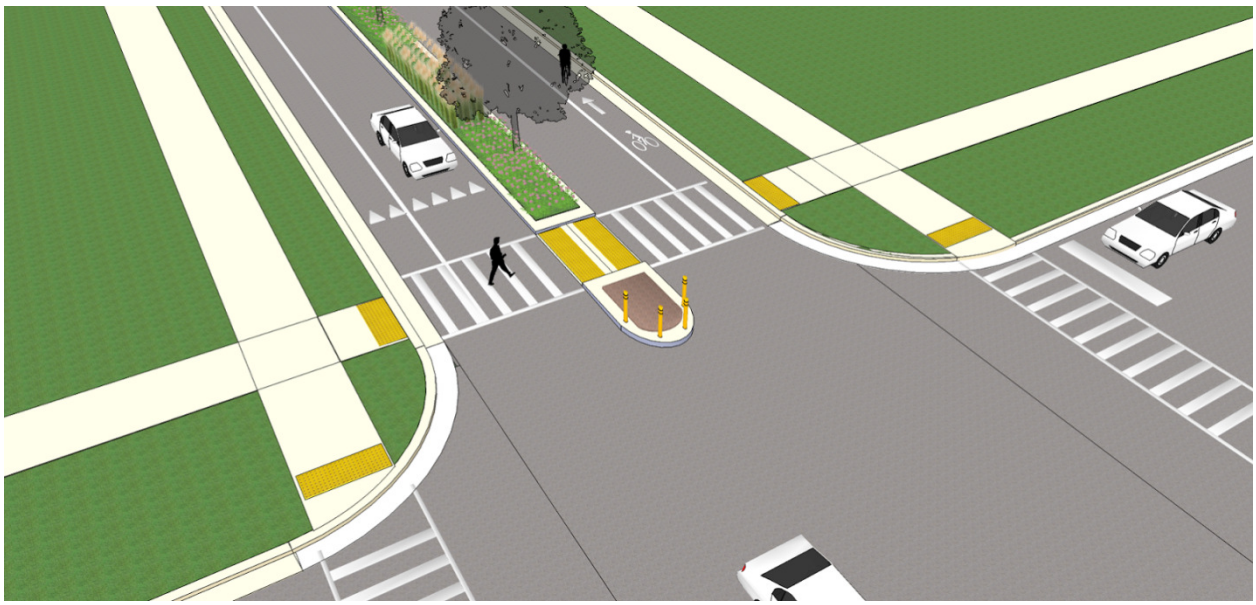
Traffic Calming and Refuge Islands

Andover Street has a relatively straight and flat alignment, which combined with its wide pavement width, encourages traffic to travel between 43 and 46 MPH. The only effective and legal method of lowering speed limits is by altering the dimensional layout of the road. These methods are typically referred to as 'traffic calming' or 'road diets' and consist of narrowing the roadway in order to lower speeds.

Andover Street is a perfect example of a street in need of a road diet. In the short term, the roadway has been restriped to reduce the travel lane widths to 11 feet. In the longer term, it is recommended that the center turning lane be converted to a raised median with a 6" to 8" curb. The median could be landscaped and also serve as a refuge island at strategically located crosswalks. The existing bike lanes could also be converted to a raised pathway with a 6" curb or remain as part of the roadway as shown in the example below. In effect this would create an attractive parkway with sidewalks, mature trees, a bike pathway and safe crosswalks. The overall calming effect would also slow down traffic, at which time a new traffic study could be conducted and a lower speed limit approved.

Figure 1 - Typical Parkway Cross-section

Figure 2 - Refuge Island



A properly designed refuge island takes time and funds to implement. A temporary refuge island assembled from concrete barrier is not recommended for various reasons – safety and liability paramount among them:

1. Concrete barriers require impact attenuation to protect vehicles from the blunt ends. At 40 MPH an array of 8 sand barrels (20 feet in length) would be required at each end of the barrier;
2. Concrete barriers must be installed at the correct taper for safety reasons. At 40 MPH the correct taper is 8:1 – meaning the barrier would have to extend 40 feet from each point to the crosswalk area;
3. There can be no exposed, unprotected barrier terminus. Therefore there can be no opening for the crosswalk. Leaving an exposed concrete barrier end is an invitation for disaster.
4. Concrete barriers will deflect when impacted by a vehicle and therefore pose a danger to pedestrians. A pedestrian could very well be injured by a concrete barrier falling on them.
5. The overall length for a refuge island built with concrete barriers would be over 70 feet in length, and would look like a work zone.

For all of the reasons enumerated above, it is the professional opinion of the Transportation Engineer that a temporary refuge island made from concrete barriers is a hazard to the traveling public and a liability for the city, and should therefore not be implemented.

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